



TYPE APPROVAL

Certificate No.:
TA-DNV-CP-0082-07304-0

Issued:
2022-12-28

Valid until:
2027-12-27

Issued for:

Glass Fibre Rovings

with type designation(s)

E6DR-390 Series

As specified in Annex 1

Issued to:

Jushi Group Co., Ltd.

669 Wenhua Rd.(S.), Tongxiang Economic Development Zone, Zhejiang 314500, China

According to:

DNV-SE-0436:2021-09 Shop approval in renewable energy

and

DNV-CP-0082:2021-09 Type approval – Glass fibre rovings

Applying:

DNV-SE-0441:2021-10 Type and component certification of wind turbines

Based on the documents listed in Annex 1.

Any significant changes in the design and/or quality of the material will render this Type Approval invalid.

Hellerup, 2022-12-28
For DNV Renewables Certification

Hamburg, 2022-12-28
For DNV Renewables Certification

Bente Vestergaard
Service Line Leader

Bernhard Krüger
Project Manager

TYPE APPROVAL – ANNEX 1

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Product description and application

E6DR-390 series is a direct glass fibre roving for manufacturing of UD, biaxial and multiaxial woven fabrics to be used in FRP components of wind turbine rotor blades.

Approved variants

E6DR16-200-390, E6DR13-300-390, E6DR17-600-390, E6DR17-1200-390, E6DR17-2400-390

Type Approval documentation

Technical data sheet(s)	E6-390 Direct Roving TDS
Test report(s)	Test Report Glass Fiber Roving (E6DR16-200-390), BG200709104, issued 2020-07-09 Test Report Glass Fiber Roving (E6DR13-300-390), BG200709105, issued 2020-07-09 Test Report Glass Fiber Roving (E6DR17-600-390), BG200709106, issued 2020-07-09 Test Report Glass Fiber Roving (E6DR17-1200-390), BG200709107, issued 2020-07-09 Test Report Glass Fiber Roving (E6DR17-2400-390), BG200709108, issued 2020-07-09
Inspection report(s)	WIR-10325803-001-Rev00, DNV, dated 2021-04-23
Quality control documentation	ISO9001:2015 Certificate, 20319142/1-1, issued 2022-03-01, valid until 2025-02-28 Several CoAs

Material Properties

Properties	Variant 1 (E6DR16-200-390)	Variant 2 (E6DR13-300-390)	Variant 3 (E6DR17-600-390)	Variant 4 (E6DR17-1200-390)	Variant 5 (E6DR17-2400-390)	Unit
Type of glass	E-glass	E-glass	E-glass	E-glass	E-glass	[-]
Type of sizing	Silane 390	Silane 390	Silane 390	Silane 390	Silane 390	[-]
Matrix compatibility	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	[-]
With or without twist	Without	Without	Without	Without	Without	[-]
Filament diameter	16	13	17	17	17	µm
Linear density ⁽¹⁾	200	300	600	1200	2400	tex

⁽¹⁾ According to ISO 1889, ± 5%

Approved production sites

Jushi Group Co. LTD
669 Wenhua Rd. (S.), Tongxiang Economic Development Zone
Zhejiang 314500, China
Last workshop inspection: 2021-04-23

Periodic assessment

2.5 years after the last workshop inspection, the client shall inform DNV about any modifications in production. An intermediate inspection might be needed based on the implemented changes.